

# Oroville Facilities Relicensing Project

(FERC PROJECT NO. 2100)

## Environmental Work Group Draft Study Plan

### SPW7-SP-W7 Land and Watershed Management

#### Introduction

~~December 11, 2001~~ February 14, 2002

#### 1.0 Introduction/Background

Land and watershed management activities within and adjacent to the project area have the potential to affect water quality and other aquatic and terrestrial resources. The Environmental Work Group raised several issues related to land and watershed management effects on aquatic and terrestrial resources, including:

- protection of riparian areas and water quality by limiting disturbance in streamside management zones;
- use of Best Management Practices during land use and management activities to avoid water quality degradation;
- rehabilitation of deteriorating watersheds to reduce channel erosion, sedimentation, and sediment yield;
- plan and manage on a watershed scale in cooperation with other agencies and private landowners; and,
- effects of land use and management activities on terrestrial plant and animal communities and habitats.

The Feather River watershed is very large (about 3,600 square miles upstream from Oroville Dam), but only a small percentage is within the project boundary (about 41 square miles upstream from Oroville Dam). Therefore, land and watershed management activities that potentially affect aquatic and terrestrial resources in the watershed predominantly occur on non-project controlled lands, which limits the ability of the project to manage these activities. Land and management activities occurring in the upper watershed may affect downstream resources, including those present within the project boundary.

Most of the land within the watershed upstream from Oroville Dam is owned by the federal government, and is predominantly managed by the U.S. Forest Service (USFS) with smaller holdings managed by the Bureau of Land Management (BLM) and some dispersed lands in private ownership. Some of the lands in private ownership along the tributaries to Lake Oroville have been developed with hydroelectric generation facilities, especially along the North Fork by the Pacific Gas and Electric Company (PG&E). A small portion of the land within the project boundary upstream from Oroville Dam is managed by the USFS and BLM, but most of the land is owned by the State. The Department of Parks and Recreation (DPR) manages the water surface area of Lake Oroville and shoreline areas typically from the waterline to about the 1,100-foot elevation. The Department of Fish and Game (DFG) manages the Oroville Wildlife Area downstream from the dam. No private lands are included in the project boundary, but adjacent residential developments on private property fall under the management jurisdiction of Butte County.

—Lands within the watershed upstream from the dam are managed under several land and resource management plans, including the Plumas National Forest Land and Resource Management Plan ([LRMP](#)), BLM's Redding Resource Management Plan ([RRMP](#)) and Record of Decision, and Butte County General Plan. Downstream from the dam, the City of Oroville manages land under the General Plan. Within the project boundary upstream from the dam, land is managed under DWR's Recreation Plan for Lake Oroville State Recreation Area, the USFS LRMP, BLM's RRMP, and DPR's Resource Management Plan and General Development Plan, Lake Oroville State Recreation Area, while downstream areas are managed under DFG's Oroville Wildlife Management Area Management Plan.

—The myriad of ownership and land management plans and activities in conjunction with the relatively small portion of the watershed actually under control of DWR results in little ability of DWR to effectively manage land within the watershed. Nonetheless, DWR can work with adjacent property owners on land use and management activities, as well as those within the project boundary, that affect resources on project lands.

## **2.0 Study Objective**

—The objective of the study is to evaluate [existing-ongoing](#) and future project-related land and watershed activities that have the potential to affect water quality. Effects to other aquatic and terrestrial resources from land and watershed activities are evaluated in other study plans.

## **Relationship to Relicensing/Need for Study**

### **3.0 Relationship to Relicensing /Need for the Study**

—DWR must prepare a report on land management activities so that the Federal Energy Regulatory Commission ([FERC](#)) can determine project conformance and compatibility with local and regional land uses and land plans. Projects must be consistent with management plans that have been identified by FERC. These can include federal, State, regional, and local plans. The report will contain information on project activities that may affect various resources, such as water quality, that are contained in the management plans.

—In addition, relicensing of the Oroville Facilities by FERC requires certification from the State Water Resources Control Board ([SWRCB](#)) that the project complies with [Section 401 of the Federal Clean Water Act and other applicable State and Federal law](#). The water quality certification signifies compliance with water quality standards and other appropriate requirements for any discharge or discharges to waters of the United States resulting from an activity that requires a federal license or permit. Information required by the SWRCB for certification includes evidence of compliance with appropriate requirements of the Central Valley [Regional Water Quality Control Board's \(CVRWQCB\) Basin Plan \(CVRWQCB 1998\)](#). Effects from project related land use and management activities on water quality must be evaluated to demonstrate compliance with water quality standards and other appropriate requirements for the application for water quality certification.

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## 4.0 Study Area

~~\_\_\_\_\_~~ The study area includes lands within the FERC project boundary and adjacent lands for effects to water quality ~~resources~~ within the project boundary. Study plans approved by the Environmental Work Group define the limits of the study area. If initial study results indicate that the study area should be expanded or contracted, the Environmental Work Group will discuss the basis for change and revise the study area as appropriate.

## Methodology and Analysis

### 5.0 General Approach

~~\_\_\_\_\_~~ This study will evaluate both current and ~~potential-foreseeable~~ future effects to water quality from land uses and management within and adjacent to the project boundary. ~~Future land uses and management are not known, but will be evaluated as these become proposed or known later in the study.~~ Much of the information for this study will be obtained from other study plans or ~~Wwork Ggroups~~. If initial study results indicate that the methods and tasks should be modified, the Environmental Work Group will discuss the basis for change and revise the study plans as appropriate.

~~\_\_\_\_\_~~ Land uses and management effects to other aquatic and terrestrial resources, such as fish or riparian habitat, are evaluated in other study plans.

#### Task ~~1. Effects~~1—Effects from Existing Land Uses and Management

The first phase of the study will focus on evaluating the potential for existing land uses and management to affect water quality, and monitoring to determine any effects. Information from land use and management study plans will be obtained, as necessary, to evaluate the potential and sources of potential effects from land uses and management activities. ~~The first phase of the study will rely on information derived from Land Use Study Plans 1 and 2.~~ #SP-L1 and Study #SP-L2. Land Use Study Plan 1#SP-L1 will describe existing land uses in and near the project, while Land Use Study Plan 2#SP-L2 will determine the management objectives of the entities which manage land adjacent to project land.

##### Task 1A—Identification of Potential Effects to Water Quality

The information about land uses and management activities in the Initial Information Package will be reviewed. In addition, this study team will confer early with the land use and management study team to identify known issues and coordinate with land use and management study plans SP-L1 (Land use) and SP-L2 (Land management) to insure that all land uses and management activities and effects are evaluated.

Information from the IIP, study team interactions, and preliminary results from SP-L1 and SP-L2 will be used to develop a table that lists each type of land use and management activity and potential effect to water quality, including potential contaminants and their sources. As the land use and management studies provide additional information, the table will be expanded to include any additional areas of concern. The potential effects to water quality will be determined through discussions with those responsible for the various land use and management activities and through field visits. Determination of effects to water quality will include evaluation of seasonal uses and management activities, source pathways, and other land and management activities that may contribute to contamination. Some of these activities may include construction of fuel breaks for fire management, hiking or horse riding trails, logging, road location and construction practices, use of chemicals for control of undesirable plant species or vector pests and fertilization of crops, establishment of critical wildlife areas and buffer zones, grazing, and planting or stocking of desirable plant or animal species. Information derived from this Task will be used to identify and implement monitoring in Task 1B.

~~Information from Land Use Study Plans 1 and 2 #SP-L1 and Study #SP-L2 will be used to evaluate the potential for water quality effects from the identified land uses and management activities. Factors evaluated will include physical, chemical, and biological land uses and management activities. Physical land use and management activities may include construction of fuel breaks for fire management, hiking or horse riding trails, logging, and road location and construction practices. Chemical land use and management activities involving the use of chemicals might include spraying for control of undesirable plant species or vector pests, and fertilization of crops. Biological land use and management activities may include establishment of critical wildlife areas and buffer zones, grazing, and planting or stocking of desirable plant or animal species.~~

#### Task 1B—Monitoring of Potential Effects to Water Quality

Specific monitoring will be developed for each type of land use and management activity identified in Task 1A with potential to affect project waters. The monitoring plan will be presented to the Environmental Work Group for approval prior to implementation. Monitoring would target specific land use and management activities with potential to affect water quality in project waters. Monitoring would evaluate contaminant presence, source, and extent. Parameters that may be monitored to determine effects from the various land use and management activities may include turbidity, erosion, nutrients, minerals, metals, pesticides, bacteria, and dissolved oxygen, among others. The specific monitoring and assessment that may be needed to evaluate the effects to water quality from land uses and management activities will be developed in consultation with the Environmental Work Group and Task Force. However, it is anticipated that much of the information that is needed for this evaluation will be provided by water quality monitoring data from SP-W1 (Project effects on water quality designated beneficial uses for surface waters). Some additional monitoring may be required under this study plan for sources or parameters not already being monitored under SP-W1. ~~Parameters that may be monitored to determine effects from the various land use and management activities may include turbidity, erosion, nutrients, minerals, metals, pesticides, bacteria, and dissolved oxygen, among others. The specific monitoring and assessment that may be needed to evaluate the effects to water quality from land uses and management activities will be developed in consultation with the Environmental Workgroup and Task Force. However, it is anticipated that much of the information that is needed for this evaluation will be provided by water~~

quality monitoring data from ~~SPW1.Study #SP-W1.~~ Some additional monitoring may be required under this study plan for sources or parameters not already being monitored under ~~SPW1.Study #SP-W1.~~

#### Task ~~2. Effects~~<sup>2</sup>—Effects from Future Land Uses and Management

—The second phase of the study will be undertaken as proposed changes to land uses and management activities become known or formulated. This phase will use the information about potential land uses and management activities to evaluate their effects on water quality.

Task 3. Progress Report—A progress report will be prepared at the conclusion of the first year of study. Interim output products will be identified through coordination with other Work Groups to meet their data needs.

Task 4. Final Report—A final report will be prepared following completion of the second year of the study.

## 6.0 Results and Products/Deliverables

### *Results*

—Information derived from this study will be used to evaluate effects to water quality from existing and future land and watershed use and management activities adjacent to and within the project boundary. Effects to other aquatic and terrestrial resources from land and watershed activities are evaluated in other study plans. Output will be in the form of tables and graphs illustrating effects or potential effects associated with each land use and management activity. Options will be presented to the Land Use ~~Workgroup~~<sup>Work Group</sup> concerning methods to mitigate future land uses and management activities that could adversely affect water quality, including protection of riparian areas, creation of streamside management zones, use of Best Management Practices, rehabilitation of deteriorating watersheds, and increased cooperation with other agencies and private landowners.

## 7.0 Coordination and Implementation Strategy

### *Coordination with Other Resource Areas/Studies*

—This study coordinates with the Land Use and Management Study team and their Study Plans SP-L1 and SP-L2~~relies on information from Land Use Study Plans 1 and 2~~<sup>#1 and Study #2</sup> for a description~~concurrency and identification~~ of existing land uses and management ~~objectives~~<sup>activities</sup> within and adjacent to the project boundary. This study plan will also coordinate with Environmental Study Plan SP-W1, both using data from that study and providing information to that study for evaluation of water quality and

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sources of impairment in project waters. Other studies will evaluate land uses and management effects to other aquatic and terrestrial resources, such as fish or riparian habitat. These studies include Environmental Study Plans SP-G1 (Effects of project operations on geomorphic processes upstream of Oroville Dam), SP-G1 (geomorphic resources), SPF1 (non-fish aquatic resources), SPF10 (anadromous fish), Resources SP-G2 (Effects of project operations on geomorphic processes downstream of Oroville Dam), SP-study #F1 (Evaluating the impacts of project operation on non-fish aquatic resources), SP-study #F10 (Project effects on anadromous fish/salmonids and their habitat), and terrestrial Study Plans SPT1 through 4 and 9 and 10. #SP-T1 (Effects of project features and operation on wildlife and wildlife habitat), SP-T2 (Project effects on special status species), SP-T3/5 (Riparian resources, wetlands, and associated floodplains), SP-T4 (Biodiversity, vegetation communities, and wildlife habitat mapping), SP-T9 (Recreation and wildlife), and SP-T10 (Effects to project features, operations and maintenance on upland plant communities). through Study #T4 and Study #T9 and Study #T10. Information developed in this study plan will also be used in SPW1 Study #W1 to evaluate water quality and sources of impairment in project waters.

## **Schedule**

~~Task 1 of the study will begin in early 2002, while Task 2 is dependent on determination of potential future land uses and management activities. A draft report will be prepared at the completion of each task, with a final report prepared at the end of the study.~~

## **Issues**

This study plan provides information for evaluation of Issue Statement W7 (

W7—Effect of existing and future project-related land management and watershed management activities (including waste disposal and pesticide use) on water quality, slope stability, erosion, sedimentation, channel stability, riparian habitat, fish habitat, and other beneficial uses) and will provide information for determination of project compliance with water quality standards and other appropriate requirements in the application for water quality certification. This study directly or indirectly addresses the following specific issues: Issues Addressed: WE8, WE11, WE12, WE13, WE14, WE15, WE34, WE41, WE46, T1, T3, T5, T10, GE1, GE15, GE16,

~~—GE17, GE18, FE11, FE39~~

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## Direct

- WE8. Provide protection of riparian areas and water quality by limiting disturbance in streamside management zones according to ground slope and stability, stream class, channel stability, fishery, and other beneficial uses, and favor riparian-dependent resources in cases of competing resource demands
- WE11. Avoid water quality degradation by using Best Management Practices during land management activities, and reduce sedimentation and channel erosion by rehabilitating deteriorating watersheds



- WE12. Coordinate with counties, Cal-Trans, and the Union Pacific Railroad to eliminate the sidecasting of waste material along travel ways, except at designated locations
- WE13. Reduce sediment yields from watersheds in deteriorating conditions and those tributary to eroding channels or hazardous flood prone areas
- WE14. Do analysis and mitigation on a watershed basis
- WE15. Cooperate with local, State, and Federal agencies as well as private landowners in long-range watershed planning. Use an interdisciplinary approach.
- WE34. Effect on water quality of livestock grazing
- WE41. What coordination for Page 2 #5? -- Could be items along roads that might sweep into the river during floods.
- T3. Effects of existing and future project operations on floodplains and project water fluctuation zones, including soil stability, wildlife habitat and natural flood control functions, revegetation of native plant communities, and restoration opportunities (e.g., red willow planting).
- T5. Project effects on riparian resources and protection and management of riparian habitat and wetlands (including vernal pools and brood ponds).
- T10. Effects of existing and future project features, operations and maintenance on upland habitat types, including revegetation and restoration efforts.
- GE1. As needed, remove excavated material from the floodplain
- GE15. Avoid water quality degradation by using Best Management Practices during land management activities, and reduce sedimentation and channel erosion by rehabilitating deteriorating watersheds
- GE16. Coordinate with counties, Cal-Trans, and the Union Pacific Railroad to eliminate the sidecasting of waste material along travel ways, except at designated locations
- GE17. Reduce sediment yields from watersheds in deteriorating conditions and those tributary to eroding channels or hazardous flood prone areas
- GE18. Revegetate disturbed areas within the floodplains to stabilize soil, benefit fish and wildlife, and restore the natural flood control qualities
- FE11. Inventory streams, streamside areas, and other wetlands in deteriorating condition and restore on a priority basis within project area and/or project affected areas;
- FE39. Insure that stream alterations restore the original flow capacity while preserving the existing channel alignment;

#### Indirect

- WE46. Spawning habitat in tributaries as they relate to operations
- T1. Effects of project features, existing and future operations (including power generation, water storage and releases, ramping rates, pump-back, water levels and water level fluctuations) and maintenance on wildlife and wildlife habitat. Specific concerns include deer winter range, band-tailed pigeon winter habitat, designated emphasis and harvest species, wintering, brooding, and nesting waterfowl, and other wildlife use of project and project-affected waters.

## **8.0 Study Schedule**

Task 1 of the study will begin in early 2002, while Task 2 is dependent on determination of potential future land uses and management activities. The monitoring plan developed in Task 1A will be presented to the Environmental Work Group or Task Force for review and concurrence in the spring of 2002. Monitoring for potential sources of contamination in Task 1B will then commence and continue for at least two years.

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Information obtained by the study will be presented to the Environmental Work Group at quarterly intervals for review to evaluate the adequacy and progress of the study. Task 2 will provide additional analyses to evaluate effects from planned or proposed land uses or management activities, and will continue until all proposed land uses or management activities have been identified and evaluated. An interim report will be prepared at the completion of each task, and a draft and final report will be prepared at the end of the study. ~~A draft report will be prepared at the completion of each task, with a final report prepared at the end of the study.~~

## 9.0 References

CVRWQCB 1998. The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region, Fourth edition. The Sacramento River Basin and the San Joaquin River Basin. CVRWQCB, Sacramento, California. (available online at: [http://www.swrcb.ca.gov/rwqcb5/available\\_documents/index.html](http://www.swrcb.ca.gov/rwqcb5/available_documents/index.html))